

PATENT APPLICATION  
IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of

Jialin SHEN

Appln. No.:

Filed: May 30, 2001

For: MATERIAL SYSTEM FOR USE IN THREE DIMENSIONAL PRINTING

Attorney Docket No.: 3926.029

PRELIMINARY AMENDMENT

Box: PATENT APPLICATION  
Honorable Commissioner of  
Patents and Trademarks  
Washington, D.C. 20231

Sir:

Prior to examination of the above-identified application,  
please amend the application as follows:

IN THE SPECIFICATION:

Page 1, before paragraph [0001] insert:

--BACKGROUND OF THE INVENTION

**Field of the Invention--**

Page 1, paragraph [0001], delete "according to the  
precharacterizing portion of Patent Claim 1".

Page 1, paragraph [0001], before "A material system ...  
98/09798" insert:

--Description of the Related Art--;

Page 2, before paragraph [0005] insert:

--SUMMARY OF THE INVENTION--

Page 2, delete paragraph [0006] in its entirety.

Page 2, before paragraph [0007] insert:

--DETAILED DESCRIPTION OF THE INVENTION--.

IN THE CLAIMS:

Page 9, line 1, please delete "PATENT CLAIMS" and insert therefore --What is Claimed is:--

Please cancel Claims 1-12 and add the following new Claims 13-27 as follows:

13. A material system for use in 3D-printing comprising:  
a solvent,  
a binder soluble in the solvent, and  
optionally, filler materials,  
wherein the material system contains two complementary polyelectrolytes and/or an initiator for a crosslinking reaction of the binder.
14. A material system according to Claim 13, wherein the two complementary polyelectrolytes are contained in two binders, respectively, or in a binder and in the solvent.
15. A material system according to claim 13, wherein the initiator is contained in the solvent or in the one or both binders.
16. A material system according to claim 15, wherein the initiator is a photoinitiator.
17. A material system according to claim 13, wherein the filler material is coated with the binder.

18. A material system according to claim 13, wherein the material system is residual-ash-poor.
19. A material system according to claim 13, wherein the material system is flowable in an autoclave.
20. A material system according to claim 13, wherein at least a substantial portion of the filler material and binder is in the form of rounded-off particles.
21. A material system according to Claim 20, wherein average particle diameter of said particles is smaller than approximately 40  $\mu\text{m}$ .
22. A material system according to claim 13, wherein the filler material is comprised of wax, PS, PMMA or POM.
23. A material system according to claim 13, wherein the filler material is comprised of metal, ceramic or carbide.
24. A material system according to claim 13, wherein the binder is comprised of a water-soluble polymer.
25. A material system according to claim 24, wherein the water-soluble polymer is PVP or a copolymer thereof.
26. A material system according to claim 13, wherein the binder comprises less than 10 weight percent of the material system.

27. A process for producing a three dimensional shape, the process comprising:

(a) providing a layer of a solvent-soluble binder and, optionally, filler materials,

(b) printing said layer with a solvent in a pattern to activate said binder,

(c) repeating steps (a) and (b) until said three-dimensional shape is formed,

wherein the material system comprised of binder, solvent and optionally filler materials contains two complementary polyelectrolytes and/or an initiator for a crosslinking reaction of the binder.--

REMARKS

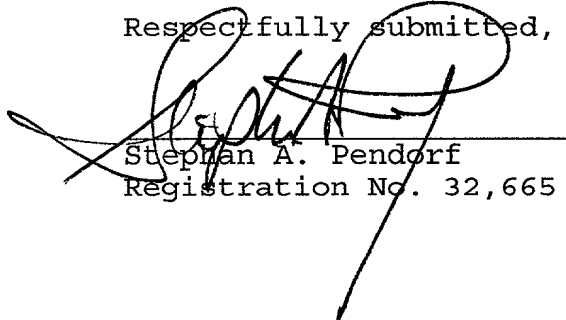
The specification and claims have been amended to conform the original translated specification and claims to U.S. requirements, i.e., appropriate section headers are added, reference in the specification to the claims have been amended in order to eliminate multiple dependent claims and claims improperly depending from multiple dependent claims, and to otherwise conform the claims to U.S. practice. Care has been taken to ensure that no new matter is added to the text.

U.S. Application No.  
PRELIMINARY AMENDMENT

Attorney Docket: 3926.029

Entry and favorable consideration prior to consideration are respectfully requested.

Respectfully submitted,



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Date: May 30, 2001

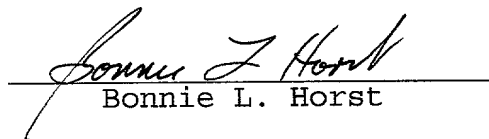
EXPRESS MAIL CERTIFICATE

"EXPRESS MAIL" MAILING LABEL NUMBER: EL568147192US

DATE OF DEPOSIT: May 30, 2001

I HEREBY CERTIFY that the foregoing PRELIMINARY AMENDMENT is being deposited with the United States Postal Service "Express Mail Post Office to Addressee" service under 37 CFR 1.10 on the date indicated and is addressed: ATTN: BOX PATENT APPLICATION, Commissioner of Patents and Trademarks, Washington, D.C. 20231.

The Commissioner is hereby authorized to charge any additional fees which may be required at any time during the prosecution of this application without specific authorization, or credit any overpayment, to Deposit Account Number 16-0877.



Bonnie L. Horst